

Single Top Plates - Code Notes

A single top plate is allowed under the International Residential Code (IRC), but it is not a common construction practice. The standard practice for exterior and interior wall framing is using a double top plate to connect wall segments, and to support framing above the plates.

Eliminating unnecessary wood framing within walls can increase the thermal efficiency of the wall system. Less framing allows more insulation to be installed, and eliminates hot and cold spots (from thermal bridging through the frame) within the wall system.

Single top plates must be adequately tied at joints, corners, and intersecting walls by at least a three-inch by six-inch, 0.036 inch-thick galvanized steel plate that is nailed to each wall, or wall segment by six 8d nails on each wall segment. Rafters or joists bearing on a single top plate must be within one inch of center over the studs below. The top plate may be omitted over lintels that are similarly tied to adjacent wall sections with steel plates. The single top plate may not be appropriate in regions with high wind loads or seismic activity; a double top plate may be needed to meet structural requirements instead.

Interior, nonbearing walls may be two-inch by three-inch studs spaced 24 inches (610 mm) on center. Or, if not part of a braced wall line (a series of braced wall panels), two-inch by four-inch flat studs, 16 inches on center may be used. Interior, nonbearing walls must be capped with at least a single top plate, and be fire blocked.

Plan Review

1. Verify that the wall framing details call out a single top plate, and specify the three-inch by six-inch, 0.036 inch-thick galvanized steel plate be installed at each corner and wall segment. Also verify that the nailing exception is specified on the building plans.
2. Verify that the spacing for the roof framing is identical to that of the wall framing. For example, the roof framing must be spaced at 24 inches on center, if the wall framing is also spaced at 24 inches on center. The rafter or roof trusses must be within one inch of being centered above the wall studs.
3. If the wall system supports a floor, verify that the floor joist spacing is identical with the wall stud spacing.
4. Confirm that the single plate will not be exposed to high wind load or high seismic areas. Double top plates are required in these areas for lateral loading.

Field Inspection

1. Verify that the top plate is fastened to the studs (using two 16d nails).
2. Verify that a three-inch by six-inch, 0.036 inch-thick galvanized steel plate is installed at each corner and wall segment, and that six 8d nails are used to attach each side of the plate to the corner or wall segment.
3. Verify that the rafters or trusses used in the roof framing are within one inch of the center of each of the studs below.
4. Verify that the floor joists supported by the studs are within one inch of the center of the studs below.

Code Citations*

**IRC 2000, thru 2009 in Section R602.3.2 Top Plate**

Exception: A single top plate may be installed in stud walls, provided that the plate is adequately tied at joints, corners, and intersecting walls by a minimum 3-inch-by-6-inch by 0.036 inch-thick (76 mm by 152 mm by 0.914 mm) galvanized steel plate that is nailed to each wall or segment of wall by six 8d nails on each side, provided that the rafters or joists are centered over the studs with a tolerance of no more than 1 inch (25.4 mm). The top plate may be omitted over lintels that are adequately tied to adjacent wall sections with steel plates or equivalent as previously described.

IRC 2000 and 2003, in Figure 602.3(2)

The figure label states "single or double top plate."

IRC 2000 thru 2009 in Section R602.5

Interior, nonbearing walls shall be permitted to be constructed with 2-inch-by-3-inch (51 mm by 76 mm) studs spaced 24 inches (610 mm) on center or, when not part of a braced wall line, 2-inch-by-4-inch (51 mm by 102 mm) flat studs spaced at 16 inches (406 mm) on center. Interior, nonbearing walls shall be capped with at least a single top plate. Interior, nonbearing walls shall be fire blocked in accordance with Section R602.8.

IRC 2009 Table R602.3(1)

For top or sole plate to stud (end nail), two 16d fasteners are required.

References

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